

CLAIMS

What is claimed is

1. A method for forming rough surface, comprising:
 - 5 providing a substrate;
 - immersing a surface layer of said substrate in a solution, said solution being able to remove said surface layer;
 - 10 forming a plurality of bubbles in said solution, wherein part of said bubbles are located on a surface of said surface layer, said surface being contacted with said solution; and
 - removing said solution.
2. The method of claim 1, further comprises putting said substrate in a reactor and immersing said substrate by said solution, and then reducing the pressure of said reactor such that said bubbles are formed in said solution.
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3. The method of claim 1, further comprises putting said substrate in a reactor and immersing said substrate by said solution, and then conveying a gas into said reactor such that said bubbles are formed in said solution.
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4. The method of claim 1, further comprises putting said substrate in a reactor and immersing said substrate by said high pressure solution, and then keep normal pressure of said reactor such that said bubbles are formed in said solution.
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5. The method of claim 1, further comprising a plurality of semiconductor structures in and on said substrate.

6. The method of claim 5, wherein said semiconductor structures are chosen from a group consisting of: transistor, field isolation, well, dielectric layer and isolation layer.

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7. The method of claim 1, further comprising cover part of said surface by a photoresist before said substrate being immersed in said solution.

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8. The method of claim 1, further comprising perform a dry process after said solution being removed.

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9. The method of claim 1, wherein said solution is chosen from a group consisting of: hydrofluoric acid, nitric acid, mixture of hydrofluoric acid and nitric acid, hydrogen peroxide, ammonium fluoride, mixture of hydrogen peroxide and hydrofluoric acid, and mixture of ammonium fluoride and hydrofluoric acid.

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10. The method of claim 1, wherein said surface layer is chosen from a group of: oxide layer, silicon layer, polysilicon layer, tungsten layer, tungsten silicide layer, titanium layer, titanium silicide layer, copper layer, photoresist, silicon nitride layer, and spin on glass.

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11. A method for enhancing adhesion of photoresist, comprising:

providing a substrate;

treating said substrate by a solution with a plurality of bubbles, wherein part of said bubbles are located on a surface of said substrate, said solution being able to remove said substrate and said surface being

contacted with said solution; and
forming a photoresist on said surface.

12. The method of claim 11, further comprises putting said
5 substrate in a reactor and immersing said substrate by said solution,
and then reducing the pressure of said reactor such that said bubbles
are formed in said solution.

13. The method of claim 11, further comprises putting said
10 substrate in a reactor and immersing said substrate by said solution,
and then conveying a gas into said reactor such that said bubbles are
formed in said solution.

14. The method of claim 11, further comprises putting said
15 substrate in a reactor and immersing said substrate by said high
pressure solution, and then keeping the normal pressure of said reactor
such that said bubbles are formed in said solution.

15. The method of claim 11, further comprises performing a
20 dry process after said substrate being treated by said solution and before
said photoresist being formed.

16. The method of claim 11, wherein said solution is chosen
from a group consisting of: hydrofluoric acid, nitric acid, mixture of
25 hydrofluoric acid and nitric acid, hydrogen peroxide, ammonium
fluoride, mixture of hydrogen peroxide and hydrofluoric acid, and
mixture of ammonium fluoride and hydrofluoric acid.

17. A method for forming capacitor, comprising:

providing a substrate;

forming a first dielectric layer on said substrate;

forming a hole in said first dielectric layer such that part of said substrate is exposed;

5 forming a first conductor layer in said hole;

immersing said substrate in a first solution which comprises a plurality of first bubbles, wherein said first solution being able to remove said first dielectric layer and part of said first bubbles are located on a first surface of first dielectric layer, said first surface being contacted with said first solution;

10 removing said first solution;

forming a second conductor layer on both said first dielectric layer and said first conductor layer;

immersing said substrate in a second solution which

15 comprises a plurality of second bubbles, wherein said second solution being able to remove said second conductor layer and part of said second bubbles are located on a second surface of second conductor layer, said second surface being contacted with said second solution;

removing said second solution; and

20 forming a second dielectric layer and a third conductor layer on said second conductor layer.

18. The method of claim 17, wherein both said first conductor layer and said second conductor layer and said third conductor layer are

25 polysilicon layers.

19. A method for forming rough surface, comprising:

providing a substrate;

forming a plurality of bubbles in a solution, said solution being

able to remove said surface layer;

immersing a surface layer of said substrate in said solution, wherein part of said bubbles are located on a surface of said surface layer, said surface being contacted with said solution; and

5 removing said solution.